REMARKS:

1) Referring to item 12) of the Office Action Summary, the Examiner has X-marked box 12) to acknowledge the foreign priority claim, but **has not yet marked sub-boxes a)1)** to indicate that the certified copy of the Priority Document has been received. The certified copy was filed on October 31, 2002 and received in the USPTO on November 6, 2002 as evidenced by our return receipt postcard. The Examiner is respectfully **requested to acknowledge receipt of the certified copy.**

2) The Examiner's attention is directed to the enclosed Letter to the Official Draftsman with Replacement Sheets of drawings for Figs. 1 and 3. A few errors in reference numbers and the like have been corrected as shown in the accompanying Annotated Sheets. These corrections are all in conformance with the written description and do not introduce any new matter. **Entry and approval of the drawing Replacement Sheets are respectfully requested.**

3) In the present Amendment, claims 1, 2 and 11 to 16 have been maintained without change, claims 8 and 10 have been canceled, and new claims 17 to 28 have been added. The new claims are supported by the original disclosure as shown in the following table, and do not introduce any new matter. Entry and consideration of the new claims are respectfully requested.

New Claims	17	18	19	20	21	22
Original Support	Cl.1	Cl.2	Cl.2,16	Cl.15,16	Cl.16	Cl.11

New Claims	23	24	25	26	27	28
Original Support	Cl.13	Cl.13,15, 16	pg.5, ln.22-37	Cl.14	pg.4, ln.16-18	Cl.10

4) Referring to the first paragraph on page 2 of the Office Action, the rejection of claims 8 and 10 has been obviated by the cancellation of those claims.

5) Before addressing the prior art rejections and comparing specific claimed features of the invention to disclosures of the prior art, the invention will first be discussed in general terms to provide a background.

The present invention relates to a method and a system for detecting an unauthorized redirection or relaying of a signal in the course of a bi-directional transmission of data between first and second transmitting/receiving units. Such a method and system may, for example, be used in the context of electronic authorization for giving access to a motor vehicle (e.g. unlocking the motor vehicle) in response to an authentication provided by a transponder incorporated in a keyfob or the like being carried by the authorized user of the vehicle.

Such a method involves a bi-directional transmission of data between the first and second units, e.g. between the base station mounted in the vehicle and the transponder connected to the key

that is carried by the authorized user. So, the transmission involves a forward signal transmission from the base station to the transponder, and then a return signal transmission from the transponder back to the base station. The return signal may carry an identification code that identifies the transponder, so that the base station will authorize the unlocking of the vehicle if the received identification code matches an expected value.

By using one or more relaying transceivers, unauthorized persons can relay the bi-directional data transmission between the base station and the transponder over a great distance. Thereby, such an unauthorized person can relay the proper identification code to the base station in the vehicle even if the true authorized user carrying the transponder is located a great distance away from the vehicle and is not intending to authorize an unlocking or access of the vehicle.

If such a relaying or redirection of the bi-directional transmission is carried out, it will necessarily influence the signal strength or amplitude of the signals being received by the transponder and by the base station respectively. In order to compensate for a reduction of the signal strength or amplitude that would arise from such a long-distance signal relaying, the relaying transceiver would typically amplify the signals in an attempt to boost the received signal amplitude back into the expected amplitude range. However, due to different signal coupling factors on the forward transmission side and on the return transmission side, respectively, the amplitudes will be influenced differently on the forward side than on the return side. For this reason, it is essentially impossible for a

relaying transceiver to accurately recreate the necessary signal powers for achieving the same received signal amplitude by the transponder and by the base station. As a result, any relaying redirection of the signals in such a manner will give rise to a difference between the received amplitudes on the forward transmission side in comparison to the return transmission side. The invention takes advantage of this fact in order to detect the occurrence of a relaying redirection of the transmission.

Namely, in the inventive method, the first unit transmits an interrogation signal. The second unit receives the interrogation signal, and measures the received signal amplitude thereof. Then, the second unit transmits a reply signal that contains or carries the measured value of the received amplitude of the interrogation signal. The first unit receives the reply signal and measures the received amplitude of the reply signal. Then the first unit compares the received amplitude of the reply signal with the returned value of the amplitude of the interrogation signal that had been received by the second unit. In this manner, the first unit is able to compare the respective amplitude damping or degradation on the forward transmission or uplink side (from the first unit to the second unit) with that on the return transmission or downlink side (from the second unit back to the first unit).

To achieve that, the inventive method necessarily involves measuring the received amplitude of the interrogation signal as received in the second unit, as well as measuring the received amplitude of the reply signal as received in the first unit.

So, in the inventive method, this involves **carrying out an amplitude measurement respectively both in the second unit as well as in the first unit**. Also, this involves **measuring an amplitude respectively both on the forward or uplink side as well as on the return or downlink side**.

These features are neither disclosed, nor would have been obvious from the prior art, as will be discussed below.

6) Referring to pages 3 to 4 of the Office Action, the rejection of claims 1, 2, 11 and 16 as obvious over US Patent 6,218,932 (Stippler) in view of "common knowledge in the art" is respectfully traversed.

7) As discussed in general terms above, the inventive method of present claim 1 includes steps in which the second transmitting/receiving unit measures the interrogation signal amplitude as received in the second unit, the first transmitting/receiving unit measures the reply signal amplitude as received by the first unit, and the reply signal amplitude is compared with the interrogation signal amplitude. This involves **two important features that are neither disclosed nor suggested by the prior art:**

(I) the received amplitude value is measured **both** in the second unit **and in the first unit** respectively; and

(II) the amplitude value of the interrogation signal is compared with the amplitude value of the **reply** signal.

8) As acknowledged by the Examiner, Stippler does not disclose a step of measuring the amplitude of the **reply** signal in the **first unit** and does not disclose a step of comparing the respective amplitude values of the **reply** signal and the interrogation signal.

Instead, Stippler does disclose measuring two amplitude values and comparing them with each other, but both measured amplitudes are amplitudes of **two successive interrogation signals** as received in the **second unit**, and both of these measurements of the amplitude are carried out **exclusively in the second unit** or transponder.

Namely, Stippler transmits a first challenge or interrogation signal with a first characteristic (e.g. a first power level, or a first phase angle, or from a first antenna) from the base station or first unit, then measures the received power of this first interrogation signal in the transponder, then transmits a second challenge or interrogation signal with a different characteristic (e.g. a different power level, or a different phase angle, or from a different antenna) from the first unit, and then measures the received power of this second interrogation signal in the second unit. The two received power levels of the two successive interrogation signals are compared with each other.

Stippler provides no disclosure or suggestion toward measuring any amplitude whatsoever **as received by the first unit**, and provides no disclosure or suggestion toward comparing the received amplitudes of the forward or uplink transmission **relative to the return or downlink transmission**. Measuring and

comparing two interrogation signal amplitudes as received in the second unit is not suggestive of measuring one interrogation signal amplitude as received in the second unit, measuring one reply signal amplitude as received in the first unit, and then comparing the interrogation signal amplitude with the reply signal amplitude. Stippler is not at all concerned with the **reply signal amplitude**. Stippler is also not at all concerned with making any **amplitude measurements in the first unit**.

Such a significant different method according to the present invention would not even have been enabled or suggested by Stippler, because Stippler would not have provided or suggested any means for measuring received signal amplitudes in the first unit whatsoever. Namely, there would have been no purpose whatsoever for amplitude measurement in the first unit according to Stippler, so a person of ordinary skill in the art would not have been motivated to provide such unnecessary amplitude measurement in the first unit.

There also would have been no purpose according to Stippler for comparing the received amplitude of an interrogation signal with a received amplitude of a reply signal, because Stippler does not suggest or aim to evaluate the amplitude damping or degradation on the downlink side at all, but rather aims to compare two purposely different forward or uplink transmissions (e.g. with two different power levels or from two different forward transmitting antennas) only on the uplink side.

This is because Stippler does not aim to detect a relaying redirection of the transmission, but rather aims to detect the substitution of a previously recorded signal for a true presently

transmitted signal (see col. 1, lines 25 to 33). For this reason, the final result of Stippler is also exactly the opposite of the final result according to the present invention. Namely, in the Stippler method, the car can be unlocked only if the two received signal amplitudes are **different** from one another. On the other hand, in the inventive method, the car can be unlocked only if the two received signal amplitudes are the **same** as one another. That is because, in the Stippler method, two different interrogation signals are purposely transmitted successively on the uplink transmission path, so that the received amplitudes of these two different interrogation signals will be expected to be different. If the two successively received uplink amplitudes are not different from one another, this suggests that there has been an unauthorized substitution of a false signal. On the other hand, the inventive method compares the amplitude degradation on the uplink side versus the downlink side, so that the expected result would be the same amplitude being received by the base station as by the transponder if a normal true transmission has taken place. In the inventive method, a difference between the uplink amplitude and the downlink amplitude indicates the existence of an unauthorized relaying redirection of the transmission.

9) The examiner has asserted various points as being "*common knowledge in the art*".

Such asserted points are not conceded or accepted as "*common knowledge*". The Examiner is respectfully requested to cite one or more prior art references supporting any suggestions of

modifying Stippler toward the present invention, if any such prior art references exist. Care must be taken to avoid a hindsight reconstruction of the invention using the present claims as a blueprint to guide such reconstruction. What a person skilled in the art "*can easily recognize*" about "*the claimed invention*" is an improper obviousness analysis. It is not relevant whether the invention, once disclosed, can be understood or recognized by a person of ordinary skill, but rather whether the prior art (without and before knowledge of the presently disclosed invention) would have suggested the invention to a person of ordinary skill at the time the invention was made. In the present case, neither the prior art references nor the "common knowledge in the art" would have provided such suggestions.

The Examiner's assertions of what "*one skilled in the art can easily recognize*" and what "*would have been obvious to one skilled in the art*" are respectfully traversed, because these assertions are not related to the invention of present claim 1. The Examiner's assertions about "*(using) any antennas that complete a receiver/transmitter pair...*" are not pertinent to present claim 1, because present claim 1 recites nothing about how many antennas are used in what combinations or arrangements.

These assertions, even if combined with Stippler, would still not have suggested the present invention, because they still would not have suggested measuring the received amplitude value of the **REPLY signal** in the **FIRST transmitter/receiver unit**. Namely, even modifying the teachings of Stippler according to the Examiner's assertions would not have suggested these important

features of the present invention. Nothing in the prior art (or in the Examiner's assertions) would have provided suggestions in this regard.

Also, as demonstrated above by the exactly opposite results of Stippler versus the invention, the Examiner's assertion is technically unfounded, because there are significant differences between twice measuring and comparing the amplitude on the uplink side (according to Stippler) versus measuring and comparing the amplitudes on the uplink and downlink sides (according to the invention).

For the above reasons, and in view of the dependence of claims 2, 11 and 16 from claim 1, the Examiner is respectfully requested to withdraw the rejection of claims 1, 2, 11 and 16 as obvious over Stippler in view of "common knowledge in the art".

10) Referring to pages 4 and 5 of the Office Action, the rejection of claims 12, 13 and 15 as obvious over Stippler in view of applicant's admitted prior art (DE 198 27 722 and DE 100 05 503) is respectfully traversed.

Claims 12, 13 and 15 depend from claim 1, which has been discussed above in comparison to Stippler. The applicant's admitted prior art, even when viewed in combination with Stippler, would not have provided any further suggestions of modifications toward the inventive method.

DE 198 27 722 aims to determine whether the downlink side of a bi-directional transmission has been carried out in a linear manner. In this regard, the system and method of this reference test whether a power or amplitude modulated signal of the

transponder arrives at the base station in a corresponding power or amplitude modulated manner. More particularly, an unambiguous characteristic is superimposed on the response signal, whereby this characteristic may be represented as a marking of data bits of the signal, embodied as a variation of the transmission power of the data bits.

Such a method according to DE 198 27 722 would not have provided any suggestions toward comparing the received signal amplitude of the response signal as received by the first unit with the received signal amplitude of the interrogation signal as received by the second unit, respectively on the downlink and uplink sides of the bi-directional transmission. Also, the method of this reference would have provided no suggestion toward measuring the received signal amplitude in both the base station as well as the transponder. Thus, even a combination of this reference with Stippler would have provided no suggestions toward the important features of independent claim 1 as discussed above.

DE 100 05 503 discloses a method of bi-directional transmission involving an interrogation signal transmitted from a first unit to a second unit, and a response signal transmitted from the second unit to the first unit. Upon receiving the interrogation signal, the second unit converts or changes a certain physical parameter such as the frequency, the amplitude, or the phase of the interrogation signal to prepare the response signal. Then, upon receiving the response signal, the first unit reverses the conversion or change of that physical parameter in order to compensate or undo that conversion. The resulting

converted and unconverted signal is compared to the original transmitted signal.

In the method of DE 100 05 503, there is no direct comparison of an amplitude damping or degradation on the uplink side versus the downlink side. For example, there is no separate measurement and then comparison of the amplitude of the interrogation signal as received at the transponder, with the amplitude of the response signal as received at the base station. Therefore, the method according to DE 100 05 503 would not be able to detect an unauthorized relaying redirection using a linear relaying transceiver. Also for this reason, even a combination of this reference with Stippler would not have suggested the invention of present claim 1.

For the above reasons, and in view of the dependence of claims 12, 13 and 15 from claim 1, the Examiner is respectfully requested to withdraw the rejection of claims 12, 13 and 15 as obvious.

11) Referring to pages 5 to 6 of the Office Action, the rejection of claims 14 as obvious over Stippler in view of applicant's admitted prior art and further in view of Bosch is respectfully traversed.

The use of tone protection according to page 11 of Bosch would not have suggested the present inventive step of checking whether the carrier frequency of the interrogation signal is continuously present without interruption from the time of the original transmission of the interrogation signal until the time of the reception of the reply signal. Page 11 of Bosch discloses

nothing about the continuity of the carrier frequency of an interrogation signal during a time period from transmission of the interrogation signal until reception of the reply signal.

No time duration information at all can be derived from page 11 of Bosch. Instead, the reference merely suggests that an imposter signal will include additional signal peaks in comparison to the authentic signal, which appear to be peaks at different frequencies than the frequencies of the authentic tone signal.

Even if the teachings of Bosch are combined with those of the above discussed references, the invention of present claim 14 or its parent claim 1 would still not have been suggested. For example, Bosch would have provided no further suggestions or information relating to the significant inventive features of claim 1 as discussed above.

The Examiner is respectfully requested to withdraw the rejection of claim 14.

12) Referring to the middle to bottom of page 6 of the Office Action, the additional prior art made of record requires no particular comments because it has not been applied against the claims.

13) New claims 17 to 28 also define significant patentable combinations of features of the invention.

For example, independent method claim 17 recites steps of measuring a received return signal amplitude in the first unit, and comparing the received return signal amplitude with the received forward signal amplitude.

Independent system claim 28 recites that the system comprises two units that each include a signal processor adapted to measure the amplitude of the respective signal received by the respective unit, as well as a data processor in the second unit that provides, in the signal transmitted from the second unit to the first unit, information regarding the measured amplitude of the signal received by the second unit, and a data processor in the first unit that compares the measured amplitudes of the two signals with each other.

From the above discussion of the references, it is apparent that the references do not disclose and would not have suggested such features.

14) Favorable reconsideration and allowance of the application, including all present claims 1, 2 and 11 to 28, are respectfully requested.

Respectfully submitted,
Werner BLATZ
Applicant

By _____
Walter F. Fasse
Patent Attorney
Reg. No.: 36132
Tel. 207-862-4671
Fax. 207-862-4681
P. O. Box 726
Hampden, ME 04444-0726

WFF:ar/4286
Encls.: postcard,
Letter to Draftsman,
2 Annotated Sheets of drawings,
2 Replacement Sheets of
formal drawings

CERTIFICATE OF MAILING:

I hereby certify that this correspondence with all indicated enclosures is being deposited with the U. S. Postal Service with sufficient postage as first-class mail, in an envelope addressed to: COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450 on the date indicated below.

_____ 8/9/04
Name: Walter F. Fasse - Date: August 9, 2004